TEXTRON Systems

Advanced Systems

In Response To:

U.S. DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Request for Information
[Docket No. 120509050-1050-01 / RIN 0660-XC001]

Title:

"Development of the State and Local Implementation Grant Program for the Nationwide Public Safety Broadband Network"

Submitted To:

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Executive Summary

Textron Systems Advanced Systems (Textron) is a program manager with experience managing the deployment of "life-critical" systems for the military. The following response to NTIA's request for comments seeks to provide input for the success of the PSBN program, and does not answer requests for comments regarding inherently inter-governmental functions, such as state and public safety governance or grantee qualifications.

Textron is providing the following recommendations regarding the request for comments sections "The Consultation Process", "Leveraging Existing Infrastructure", and "Additional Comments":

- **The Consultation Process.** Evaluation, design, and implementation of a network acquisition plan by a neutral and technically experienced program manager is key to ensuring that the nation-wide deployment is manageable for FirstNet, state governments, public safety users, and vendors. Textron believes that the role of public safety users, state governments, the FirstNet Board, the Federal Government, and vendors should be aligned to ensure the successful deployment of the historic Public Safety Broadband Network (PSBN). And most importantly, a "user-focused and user-driven" approach will ensure the network is equipped to handle all public safety and disaster situations.

- **Leveraging Existing Infrastructure to Expand Network Footprint.** Significant investments have been made by all stakeholders in Land Mobile Radio (LMR), Long Term Evolution (LTE) fiber backhaul and interoperable handset, site hardening by commercial carriers, and many other aspects of the nation's network infrastructure. Planning and coordination by a qualified program manager between state, local, and tribal government and public safety users can translate macro-requirements into micro-requirements that leverage existing infrastructure to the utmost, expanding the geographic footprint of the PSBN and increasing the functionality of the network as a whole.

- **Independent Verification and Validation (IV&V) of Interoperability.** Rigorous and independent verification of all stakeholders' adherence to interoperability standards must be enforced to ensure the goal of nation-wide network architecture is achieved.

- **Clearinghouses.** The use of clearinghouses by states, if properly designed and effectively managed by an agent of FirstNet acting as the federal program manager, is a viable option. Preliminary analysis suggests that a federal clearinghouse model, supported by state, local, and tribal governments, may provide states with the most cost-efficient model.

- **The "Data-First Network".** Video and Voice are not sufficient for First Responders or for those in danger –delivering actionable information to the public safety community must be the bedrock of the PSBN vision and implementation, and is critical to the success of the network. The adoption of information integration and textual and graphic products in the commercial and military environments indicate that the use of these products by public safety workers is inevitable and will provide substantial improvements in public safety responsiveness and efficiency. The PSBN network must be designed from the ground up to provide the capacity and infrastructure to support these applications in addition to the voice and video capabilities currently envisioned.

The Consultation Process

Program Management. Significant obstacles remain in implementing a successful deployment of the PSBN. Collecting, negotiating and managing expectations of all stakeholders, including state, local, and tribal governments, public safety users, carriers, and equipment providers will be instrumental to the success of the program.

Managing acquisitions, such as procurement of wireless towers, fiber, and handset equipment required for the system rollout within the budget, schedules, and requirements of legislation, states, and public safety users, will be challenging due to the number and multi-dimensional nature of procurements needed for an effective deployment of the network. Financial planning and management of funding, price models, revenue streams, and grants for both rural and urban areas is required if the mandates of the public law are to be met. Coordinating the effort within the scope of business and technical requirements of a federal program, with its complexities and legal subtleties, while efficiently leveraging the investments and capabilities of commercial industries, will be a multi-phase, multi-stakeholder process. Consequently, a neutral, experienced program manager is a "must-have" for a successful PSBN rollout.

Textron encourages the hiring of a program manager without conflict of interest or vested financial stake in PSBN related lines of business; the program manager must be able to collaborate with all stakeholders with the highest level of integrity. In addition, the program manger must have technical expertise in "life-critical systems" to guarantee the system works for First Responders in emergency situations while simultaneously supporting routine public safety operations. Planning and coordination by a qualified program manager between state, local, and tribal government and public safety users can translate macro-requirements into micro-requirements that leverage existing infrastructure to the utmost, expand the geographic footprint of the PSBN, and ensure backwards compatibility and technological innovation. As LTE standards in the 700 MHz band continue to evolve, as well as to meet the requirements of the P.L. 96-12, all stakeholders will need clear guidelines on interoperability requirements for the network, and this begins with the state planning process.

A qualified program manager acting as an agent of FirstNet would be instrumental in using the planning process to identify best practices of existing regional networks and seeking ubiquitous participation by all state, local, and tribal governments.

Textron urges the NTIA to allow more than adequate time for the planning and evaluation by the states, as each state's initial planning process will be a primary cost-driver in the cost forecast of network implementation. The planning process should be on "user-focused, user-driven" networks that can move beyond voice and video

capabilities, and be able to effectively handle the data needs of public safety users. While voice and video capabilities will be of great importance to all public safety users during operations, "up-front" system planning for spikes in data-loads for emergency situations is critical to ensure that sufficient bandwidth is planned for the initial implementation, and that expensive retro-fitting of the network does not evolve into a long-term cost driver (see Figure 1). All potential users, including state, local, and tribal governments, and federal users, should be asking the critical question, "How much data do we need to transmit and carry in disaster scenarios?"

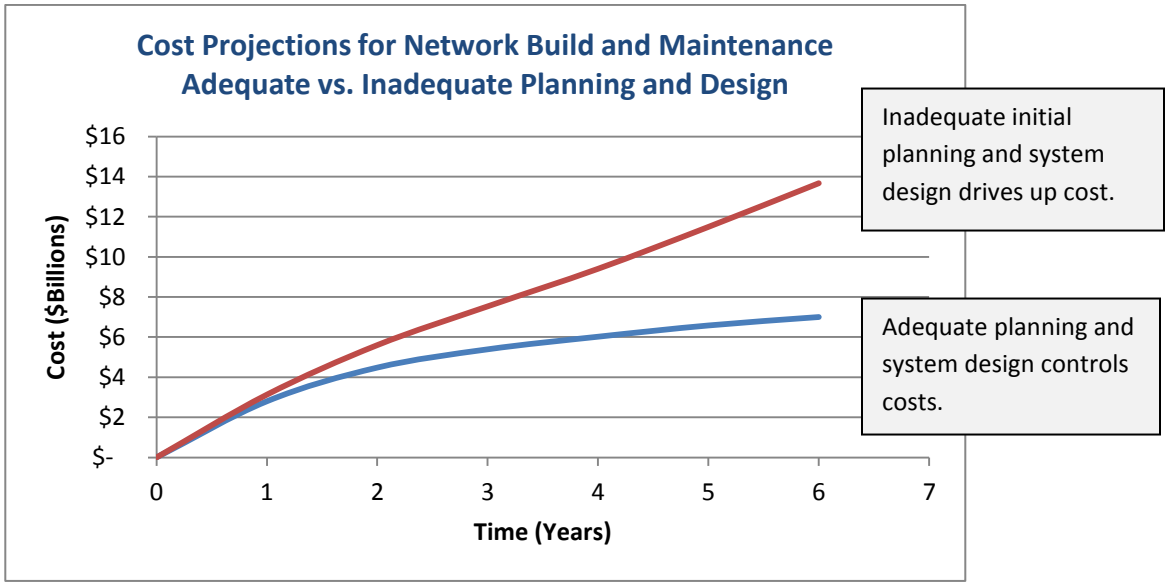

Figure 1. The Value of Planning Up Front.

Leveraging Existing Infrastructure

Textron supports all business models that provide public safety users with life-critical capabilities and recommends that as a first step, the PSBN program manager assists in the decision-making, providing information to the FirstNet Board on business models that will be most effective for implementation. Various models may expand the geographic footprint of the PSBN and promote the most efficient and effective use of federal funding. Open and fair competitions at every stage of network design, build, operation and maintenance are the best approach to guarantee efficient and cost-effective use of the taxpayer dollar.

Textron urges NTIA to encourage planning for public-private partnerships in geographic areas where such planning is appropriate. In some areas financial and cost model economic considerations may favor a build, own, and operate model. In this model, the network is supported by public safety users and operated by commercial entities, or fully owned and operated by a public safety entity. Subscription revenue from state, local, and federal public safety users could be used for network operation and maintenance. In another

scenario, multi-state alliances may favor an alternative model in which highly capable networks, developed and operated by existing commercial entities, can provide the bulk of PSBN services for routine operations via local selections by local entities. In this scenario, the PSBN network provides additional bandwidth "gap filling" capability and incentives to commercial providers to support public safety operations. However, in other areas, either locally, regionally, or state wide, there may not be the subscription base to financially maintain an independent network. States may want to pursue more complex carrier partnerships for those areas, a process that will be heavily influenced by the infrastructure of the carrier and the geography of the proposed region.

Ultimately, there is unlikely to be a simple, one size fits all solution. The FirstNet board will benefit from a capable program manager that can analyze and help develop the options necessary to tailor the local, state and regional models and plans, insuring that the network is both functional and economically viable.

Clearinghouses. The use of clearinghouses by states, if properly designed and effectively coordinated by an agent of FirstNet, is a viable option. However, preliminary analysis suggests that a federal clearinghouse, supported by information and requests submitted by the states, would be a more cost and operationally efficient model than the creation of 50 separate clearinghouses, and may prevent possible splintering of network design (see Figure 2). Textron also supports a hybrid model including both state clearinghouses and a federal clearinghouse option as another possibility.

	Administrative Costs per Clearinghouse	Multiplier Quotient	Total Administrative Costs
State Model 50 State Clearinghouses	A	50	A **x 50**
Federal Model 1 Federal Clearinghouse	A	1	A **x 1**
Hybrid 5 State Clearinghouses & 1 Federal Clearinghouse	A	6	A **x 6**

Figure 2. Administrative Costs and Clearinghouse Models.

Technical Resources and Independent Verification and Validation (IV&V). Textron urges NTIA to incorporate IV&V best practices to assist state and local governments in determining the suitability of existing infrastructure and equipment for integration in to the PSBN in a technology-neutral manner. Significant investments have been made by all stakeholders in LMR, LTE fiber backhaul and interoperable handset, site hardening by commercial carriers, and many other aspects of the nation's current network infrastructure.

The Technical Advisory Board for First Responder Interoperability stated the following, "The open, consensus-based process … creates a forum which encourages both technological innovation and the maintenance of

backward compatibility. This approach has allowed service providers to offer new services while protecting the significant investments they have made in the construction and operations of their networks."

Rather than specify detailed technical requirements, the federal government and FirstNet should provide all state and local governments with the ability to independently verify and validate interoperability of all network components, services, and attachments. In addition, a default set of requirements should be established and maintained for use as an implementable reference model, facilitating the implementation of performance benchmarking. This type of default design could also serve communities of interest that may not have the resources to develop an independent design, but have a need for an independently constructed and locally managed network.

Additional Comments - The Data First Network

What is a "Data-First Network"? It is a network that allows First Responders new capabilities to use real-time data to save lives. Textron provides the following examples of potential First Responder capabilities in the Data-First Network framework.

Large Scale Disaster: The "Katrina" Scenario

In this scenario, a police officer is dispatched to determine where and how many residents remain in a geographic area under a widespread threat in which an evacuation order has been given. With a simple voice/video network, the officer is still required to go block to block and house to house to determine if anyone is still in the area.

Voice, text and video to provide situation awareness to first responders. With a Data First Network, the officer would be provided with a device that dynamically pulls and integrates data from multiple sources, such as recent internet traffic volume, electrical load from individual buildings, overhead imagery from commercial sources, and other publically available sources to provide the officer with a real time view of synthesized information on: 1) who and how many residents are in specific locations in normal times; 2)how many houses and blocks are exhibiting signs of occupation at that specific time. The officer has significantlyimproved situational awareness as he starts his/her assignment, enabling more efficiently execution of his/her mission.

Connectivity between all levels of emergency response enhancing coordinated solutions. Likewise, his/her location can be automatically tracked, providing response coordination centers with a real time picture of areas that have already been searched and secured, without requiring the officer to take time to make specific reports on each residence and structure. These capabilities are available today, and are in use by military forces now.

Post-Disaster Scenario: Fire Response

Another example of the power of the data first network is associated with a post-disaster scenario, in which there are numerous fires in view of a Fire Company. Looking at a cell tower activity map could show that while a large fire in an industrial area may have a seemingly greater volume and urgency, an automated assessment of the materials and activities of the industrial area shows little danger presented by the fire, while a smaller fire in another location has cell and telephone traffic in close proximity to the second fire.

An architecture that allows for the rapid acquisition of emergency response "apps". Giving the Fire Company the information in a prioritized data product, instead of asking the company to review video images and make their own determination of priorities via voice communications can save valuable time, permitting the most effective deployment of the fire company's time and resources.

Additional Comments - The Textron PSBN War Games

Textron is investing in a series of War Games to explore the challenges and opportunities inherent in setting up the FirstNet board, and ultimately deploying PSBN nationwide.

Textron's War Games are bringing together government, industry and user communities for a 360 degree perspective on this unprecedented undertaking. The War Game exercise is a trusted approach to understanding an environment with complex or undefined variables, much like that of the development of the PSBN.

Textron is taking the unprecedented step of publicly releasing the results of the War Games and sharing it with relevant government agencies to contribute to the ultimate success of the PSBN. By examining three potential mixes of board members for FirstNet, War Game participants identified important characteristics, experience and skills sets of potential board members for FirstNet, as well as the role and focus of a program manager. Attached for consideration are the results of War Game 1, held on May 24-26, 2012 at Textron Inc. offices in Washington, D.C.